UDK 616.72-002.77:577.175.8 **Original Scientific Paper**
doi: 10.7251/SANUS2401181Z

COMPARISON THE EFFECTIVENESS OF STANDARD AND COMBINED OCCUPATIONAL THERAPY TREATMENT IN INCREASING SHOULDER AND ELBOW MOBILITY FOR PATIENTS WITH RHEUMATOID ARTHRITIS

Nada Savković [1], ***Gordana Grbić*** [1], ***Gordana Savković*** [1]
[1]Academy for Applied Studies Belgrade, College of Health Sciences, Cara Dušana 254, 11080 Zemun, Belgrade, Republic of Serbia

Abstract. *Rheumatoid arthritis has been identified as the most common chronic inflammatory joint disease. It leads to a decrease in professional skills and independence in daily activities with accompanying personal and social problems. The basic tasks of rehabilitation interventions are controlled resting by using joint`s relaxed positions, maintenance of physiological muscle length in order to prevent deformities and educating patients about preserving energy capacities to maintain functional independence. Aim of the study is to examine the effectiveness of occupational therapy with the addition of exercises from a special education program in comparison to standard occupational therapy treatment for increasing the mobility of the upper extremities of patients with rheumatoid arthritis. A sample of 64 patients included in rehabilitation at the Rehabilitation Clinic "Dr. Miroslav Zotovic" in Belgrade were evaluated with somatopedic tests to estimate the motility of upper extremities - O` Connor test and Ring rehearsal. After the evaluation individually dosed exercise program was added to occupational therapy and conducted for 12 weeks together with occupational therapy for an experimental group of 32 patients, while the control group was only in the process of occupational therapy without the special education training exercises. At the end of the study, the same tests were performed to re-evaluate mobility in the examined joints of patients from both groups. Patients from the experimental group performed better in the examinated variables related to oculomotor coordination of elbow and shoulder motion. Based on the obtained results it can be concluded that standard methods of occupational therapy combined with the elements of exercises from the special education program leads to increased mobility in the elbow and shoulder joint.*

Key words: *occupational therapy, rheumatoid arthritis, special education*

Introduction

Rheumatoid arthritis (Arthritis rheumatoides) is a chronic inflammatory joint disease. The prevalence is 0.3-1 percent and is more common in women in developed countries [1]. Average working capacity of patients during the ten years since the onset of the disease reduce to half while 50% of patients in this period completely lose the ability to work [2]. According to the reports from United States, among people in elderly population, patients with rheumatoid arthritis are those who most often require medical interventions [3]. Rheumatoid arthritis is a connective tissue disease of unknown etiology and progressive character and proceeds through phases

of remission and exacerbation. So far, none of the existing hypotheses (viral etiology, autoimmune disorder, genetic predisposition) about the etiology of the disease has been proven. In all phases of the disease, it is especially important to maintain the function of the hand, and as its dysfunction manifests itself relatively early, early occupational therapy treatment is necessary [4,5,6,7]. Destructive polyarthritis, which leads to deformities of the wrists and fingers, leads not only to the loss of working ability, but also to the difficulty and / or inability to perform self-care activities and basic daily activities [8]. Evaluation of patients with rheumatoid arthritis, besides the basic occupational therapy assessment tools that assess the impact of disease on joints, muscles, tendons, nerves, skin, and soft tissues, includes the use of specialized pain and fatigue tests for estimation the performance of self-care and daily life activities, professional and recreational activities, and all occupations which structures a person's time. Comprehensive occupational therapy assessment also includes an assessment of the environment and conditions at home and at workplace to determine if and how their improvement can lead to an improvement in patient capacities. Psychological status, personal goals and interests are also assessed, in order to discover and activate adequate psychological patterns that make it easier for the patient to adapt to living conditions that changed [9]. The range of interventions used in occupational therapy in working with people with rheumatoid arthritis in the acute phase, includes, depending on the severity of the condition and the degree of disease activity, either complete rest or just positioning and inactivity of inflamed joints, practicing alternative ways of performing self-care activities and use of adapted equipment and assistive devices for daily activities [10]. Controlled rest of all segments in functional position, performing movements only to the pain limit, prevention of general and local fatigue, providing preserving of energy capacities through relief positions and patient education are priorities in the exacerbation phase. Maintenance of physiological muscle length and prevention of deformity in the acute phase are basic task of occupational therapy interventions. Investigating the attitudes of occupational therapists pointed to the fact that the general approach is not the most effective use of the treatment time at an early stage of the disease and those interventions should be individualized, directed towards self-help and self-education, client-centered and driven by patient's personal needs at the time of hospitalization [11, 12]. In the advanced stage with irreversible joint damage, occupational therapy goals are modified depending on the patient's functional abilities and aimed to maintenance general condition, muscle strength, mobility of all joints, making aids (splinting) and exercise program for hand and upper extremities [13, 14]. It also includes practicing relaxation techniques to relieve pain and stress, self-education and education about the disease, counselling, psychosocial assistance and professional rehabilitation with adaptation of the environment and/or task modification in order to enable patient to function independently [15]. Sometimes, in addition to drug treatment and physical rehabilitation, surgical treatment is necessary at a late stage, so the role of the occupational therapist is redirected towards preoperative preparation and postoperative assessment and treatment [16]. Although the terms "patient's education and self-education" can be interpreted in different ways, basically they are used to descript patient's active participation in treatment and realization of an

interactive relationship between him/her and professionals in teamwork. Self-help or self-education is learning and practicing the skills necessary to perform an active and emotionally satisfying life in the light of coping with a chronic illness [17]. In occupational therapy, this includes helping a person acquire and master a complex set of skills and attitudes that help maintain or improve health, reduce dysfunction, and promote optimal participation in routine activities. The theoretical concept of clinical special education treatment consists of areas such as stimulation of motor development, stimulation of sensory development, verbal stimulation, stimulation of gnostic functions, and stimulation of social development, relaxation and motivation [18]. For this research assessment methods and elements of clinical special education treatment for stimulation the development of motor abilities in adults were used.

Aim of the study is to examine the effectiveness of occupational therapy with the addition of exercises from a special education program in comparison to standard occupational therapy treatment for increasing the mobility of the upper extremities of patients with rheumatoid arthritis.

Hypothesis is that patients with rheumatoid arthritis who were given exercises with elements of special educational treatment along with occupational therapy will have a greater increase in mobility of the proximal joints of the hand - shoulder and elbow than patients who were only in the occupational therapy program.

Material and methods

Study design. Study was conducted as a randomized controlled clinical trial (RCCT) - design that randomly assigns participants into experimental groups. In RCT, an intervention is investigated by comparing one group of people who receive the intervention with the other group who do not, and the only expected difference between the groups in a randomized controlled trial is the outcome variable being studied. In this investigation both intervention groups were treated identically and received the usual occupational therapy treatment according to the protocol of the institution [18,19] except that participants from experimental group received special education treatment as an addition to occupational therapy and the participants from control group do not. Research conducted in this way can give an answer to practical question of whether introducing the addition could improve outcomes over and above the current state of practice.

Sampling/randomization. Participants were randomly selected from groups of fully and partially hospitalized patients. Among them there were patients hospitalized for the first time and those with multiple hospitalizations at the clinic. The only condition for participation in the research was that the patient had a diagnosis of inflammatory rheumatoid arthritis and that he/she was prescribed occupational therapy. Except occupational therapy, each subject was prescribed by a physiatrist an individual kinesitherapy program and various physical procedures, but these variables were not considered in the research. Each patient was offered to participate in additional exercises in the occupational therapy units, after completion of the mandatory occupational therapy treatment prescribed for him/her. An experimental group was formed from the patients who agreed to take extra time and be trained new exercises.

Participants who agreed to be included in the experimental group of the study signed a consent form. Control group was composed of patients who were neither interested nor motivated (each for their own reason - pain, lack of time, saturation, etc.) to learn new additional exercises and movements. They were offered to sign their consent to be included in the control group of the research and evaluated by the tests that were used, and those who agreed were included in the control group. The research was conducted in the occupational therapy units. Researchers are graduate occupational therapists also with the degree in special education and rehabilitation who were trained in their basic studies to complete the assessment and selection, dosage and application of the exercises that were used, so that no additional training was required.

Sample. During the study, some patients were excluded because they completed rehabilitation and were discharged from the clinic, and a small number of subjects were excluded because they were not regular in attending occupational therapy.The final sample of the study was formed of 64 patients divided in two intervention groups (experimental and control) of 32 subjects each. All participants from both groups were prescribed occupational therapy according to the protocol of the clinic. In the experimental group, special educational treatment was applied with a set of personalized exercises from the special education program in addition to standard occupational therapy procedures for at least 12 weeks, while the control group was only in the process of occupational therapy. After that period, participants from both groups were retested with the same tests. According to gender in the final sample 40 patients (62.5%) were female and 24 (37.5%) male. In experimental group there were 23 (71.87%) female and 9 (28.12%) male participants and in control group there were 17(53.12%) female and 15(46.87%) male participants.The average age of the subjects of the experimental group was about 56 years (56.28), the youngest subject was 23, and the oldest 62, while the average age of the control group was slightly lower (55.98), and ranged from 27, which was the age of the youngest respondent, to 68, which was the age of the oldest.

Data collecting. General data (age, gender, diagnosis, duration of occupational therapy) were obtained from available medical documentation. Data for dependent variables identifying the degree of motor impairment were collected using standard assessment methods in occupational therapy and special education and through observation during treatment. **Measuring instruments.** During the research two dependent variables were examined: eye - hand coordination at the level of the shoulder joint and eye - hand coordination at the level of the elbow joint. Both assesment tests that were used falls within the basic battery of special education tests – Ring test measure oculomotor skill at the level of the shoulder joint and O' Connor test measures oculomotor skill at the level of the elbow joint.Each test was performed both with left and right hand.

Study protocol. After the evaluation, each patient from experimental group received personalized set of exercises selected from the "Open system of human development stimulation" (20). These exercises are the most common form of stimulation of motor development in the daily clinical practice of special education, and they are performed with the active participation of the patient and are accompanied by vocalization. In this study exercises were from group of exercises for stimulating the development of general motor skills of upper extremities aimed for improving and

stimulating development of movement coordination at the level of elbow and shoulder joint and from the group of exercises for stimulation the development of the power of elbow and shoulder movements [20]. These excersises as a suplement to occupational therapy treatment were performed with the patients from experimental intervention group for 12 weeks, allways at the end of each occupational therapy session, while second intervention group (control group) was only in the process of occupational therapy. A number of respondents from experimental group continued with partial hospital (outpatient) treatment upon discharge after an administrative break, while the other continue excersising at home. All participants from both groups were retested at the first subsequent control with the same tests.

Statistical means and procedures. Data obtained from the study were compared using two nonparametric tests - the Mann-Whitney test and the Wilcoxon Signed Ranks Test. The Mann-Whitney test is used in experiments in which there are different subjects in each group, but assumptions of parametric tests are not possible. The Wilcoxon Signed Ranks Test has the null hypothesis that both samples are from the same population. The Wilcoxon test creates a unified rank of all observed differences between two dependent measurements. Uses a standard normally distributed Z-value to test significance. Data values were presented as mean ± standard deviation, and p-value <0.05 was considered statistically significant. Student t-test was used to compensate for the groups. Statistical analysis was performed using the Statistical Package for Social Sciences - IBM SPSS Statistics for Windows (version 15.0).

Ethical issues. The research was conducted during 2014/15 in the occupational therapy departments at the Rehabilitation Clinic "Dr. Miroslav Zotović"in Belgrade. The Board of the Clinical Ethics Committee (No. 03-1908 / 1) approved the study. The study was conducted in a clinical setting with the written consent of all patients involved in intervention groups.

Results

Following the goal and tasks set to determine the impact of combined treatment on the motor abilities of the upper extremities of patients in the process of rehabilitation as well as determining the justification for including elements of special education in the process of occupational therapy, we came to certain results. Results are presented in Tables 1 - 4.

The results obtained from Ring test that are represented in Table 1 and Table 2 show values for right and left hand for both experimental and control group before and after the treatment. Patients from experimental group on Ring test showed better achievement and statistically significant (p-value <0.05) improvement for both hands after the treatment compared to the patients from control group.

Table 1. Table 1 show Ring test values for right hand for experimental and control group before and after the treatment

Parameters	Ring test values right hand before treatment		Ring test values right hand after treatment	
	Control group	Experimental group	Control group	Experimental group
N	32	32	32	32
AS	12.38	11.34	11.23	9.00
SD	7.89	6.87	7.38	4.65
Mann-Whitney U	589.500		280.500	
Wilcoxon W	1262.500		900.500	
Z	-0.572		-3.999	
P	**0.573**		**0.000**	

Table 2. Table 2 show Ring test values for left hand for experimental and control group before and after the treatment

Parameters	Ring test values right hand before treatment		Ring test values right hand after treatment	
	Control group	Experimental group	Control group	Experimental group
N	32	32	32	32
AS	13.76	13.07	12.81	10.11
SD	5.68	4.59	5.86	5.658
Mann-Whitney U	592.000		320.500	
Wilcoxon W	1243.000		950.500	
Z	-0.419		-3.179	
P	**0.670**		**0.001**	

Results from O'Connor test are presented in Table 3 and Table 4 and show values for right and left hand for experimental and control group before and after the treatment. These values show that patients from experimental group on retest acomplished better and statistically significant achievement for both hands than patients from control group (p-value <0.05).

Table 3. Table 3 show O'Connor test values for right hand for experimental and control group before and after treatment

Parameters	O'Connor test values right hand before treatment		O'Connor test values right hand after treatment	
	Control group	Experimental group	Control group	Experimental group
N	32	32	32	32
AS	24.68	23.13	25.43	17.23
SD	8.66	9.34	8.76	5.87
Mann-Whitney U	569.500		188.000	

Wilcoxon W	1187.500	714.000
Z	-0.609	-5.749
P	**0.545**	**0.000**

Table 4. Table 4 show O'Connor test for the left hand for experimental and control group before and after treatment

Parameters	O'Connor test values right hand before treatment		O'Connor test values right hand after treatment	
	Control group	Experimental group	Control group	Experimental group
N	32	32	32	32
AS	26.86	26.07	25.58	17.83
SD	8.58	7.94	8.39	5.51
Mann-Whitney U	580.500		243.000	
Wilcoxon W	1210.500		880.000	
Z	-0.378		-4.434	
P	**0.705**		**0.000**	

Patients from the experimental group progressed at various levels after the application of programmed treatment in the examined motor abilities, while the participants from the control group did not show such progress, which was expected since they did not receive additional stimulation through exercises. Acquired results show that examined variables - eye-hand coordination at the level of the shoulder joint and eye-hand coordination at the level of the elbow joint showed statistically significant differences between experimental and control groups obtained in testing before and after treatment. By analyzing the acquired results for the experimental group, we can conclude that the programmed treatment of special education conducted as a supplement to occupational therapy activities during rehabilitation at the clinic and continued at home until the expiration of 12 weeks had a statistically significant effect on increasing shoulder and elbow mobility and general hand motor skills. **Our hypothesis** that patients with rheumatoid arthritis who were given exercises with elements of special educational treatment along with occupational therapy will have a greater increase in mobility of the proximal joints of the hand - shoulder and elbow than patients who were only in the occupational therapy program was confirmed.

Discussion

Our treatment could not affect the duration of rehabilitation and therefore occupational therapy in hospital conditions, although subjects who were discharged before the end of 12 weeks continued to do exercises at home. There are different findings from several studies about economic aspects and health maintenance and benefits that investigate whether it is beneficial for clients to exercise at home or not. In conclusion of a study about cost-effectiveness of high-intensity exercise program compared with conventional rehabilitation in patients with rheumatoid arthritis

reaserchers found that provided long-term, high-intensity exercise classes compared with conventional physical therapy showed insufficient improvement in the valuation of health to justify the additional costs in patients with rheumatoid arthritis [21]. Results obtained after the application of the combined program of special education and occupational therapy are in line with the findings of previous research which states that in all chronic diseases and conditions patient's education is necessary and recommended as an integral part of treatment [22, 23, 24]. Although effectiveness of joint protections and techniques for energy conservation that lead to pain reduction and improvement in daily activities with increased social participation, were proved in various randomized trials with high levels of evidence some researchers find that home exercises are also effective [11, 12]. There are several studies that confirm how attending a modular behavioural education programme can be effective for at least one year in enabling people with rheumatoid arthritis and psoriatic arthritis to reduce pain, improve psychological status and self-manage their condition and that the improvements achieved during the 2-year strength-training period were sustained for 3 years even in patients with early RA [25]. Review of the literature in eight of the eighteen studies found in seven databases confirmed that targeted education for conducting aerobic exercise at home gave good results in assessing physical and functional performance as well as quality of life of patients with rheumatoid arthritis after the program, although the quality of the reviewed studies was uneven (26). Systematic review of more research studies has shown more significant correlation between education the patients with rheumatoid arthritis in combination with application of joint protectors on increased quality of life and functional performance, than combination of common rehabilitation treatment and laser therapy, where low correlation was found [27]. In twenty-four studies investigating non-pharmacological interventions for fatigue in rheumatoid arthritis involving 2882 patients evidence of pain reduction and more effective control to withstand pain was referred when the physical activity is combined with psychosocial and educational activities at home or training exercise at home [28].

Limitation of the study and implication for practise. These results must be interpreted with caution due to a small sample and almost ideal clinical settings provided in occupational therapy units in Clinic for rehabilitation "Dr Miroslav Zotovic". Although the obtained results show that patients from the experimental group had better achievement in measured variables, the fact that each of them got assistance from occupational therapist with the set of exercises added to treatment prolonged each occupational therapy session and if applied as compulsory part of a treatment it could demand more medical staff. Study lacks generalization in greater view and the replication of the study in different occupational therapy rehabilitation units and with a greater sample of participants is required. When taking into account the complexity of hand function only a limited number of movements were measured in this study, and they do not include evaluation of hand functions through object manipulation and numerous movements of hand and fingers performed in the act of capturing and releasing different shaped objects in the tests. Greatest limitation on implementing special education exercises in clinical practice of occupational therapy is that even when increased mobility in the shoulder and elbow joint was achieved

patient's functional ability to use hand in common every day activities was not further explored (yet is was not the part of the study), and for each participant is more important what he/she can do with the arm and hand than what is the numerical score obtained in test situation.

Conclusion

The research was conducted in order to determine the effects of the elements of special educational treatment on the motor abilities of patients who are in the process of occupational therapy and the effectiveness of such an integrated approach. Obtained results are related to the consequences of the very nature of the disease, which more affects small joints of hand and fingers and thus reduced their motor performance and also the possibility of influence of the programmed somatopedic treatment on them, but significantly influenced variables that measure motor abilities of larger proximal joints of kinesiology chain "hand". The subjective perception of patients in the experimental group was that it was easier for them to perform some routine daily self-care activities that require engaging the entire range of motion of the arm from the shoulder to the elbow in various positions. Performances of some ordinary daily self-care activities (although not being a subject of this research) such as reaching for common objects from above or below, dressing up the upper parts of clothing, putting socks on, washing feet and lower body parts, combing and washing hair, were much easier. Finally, we can assert that our work goals are met and that we have determined that there is positive impact of special education exercises on the motor skills of patients in the process of occupational therapy.

References

[1] Hakim A, Clunie GPR, Haq I, Oxford Handbook of Rheumatology. 3rd edition. Oxford, United Kingdom: Oxford University Press; 2011.
[2] Sokka T, Kautiainen H, Möttönen T, Hannonen P. Work disability in rheumatoid arthritis 10 years after the diagnosis. J Rheumatol. 1999 Aug; 26(8):1681-5. PMID: 10451062.
[3] U.S. Bureau of Labor Statistics.(2014).Nonfatal occupational injuries and illness requiring days away from work, 2014 (USDL 15-2205) [News release]. Retrieved from http:/ /www. bls. Gov /news. release/ pdf/osh2.pdf
[4] Vliet Vlieland TP. Rehabilitation of people with rheumatoid arthritis. Best Pract Res Clin Rheumatol. 2003 Oct; 17(5):847-61. doi: 10.1016/s1521-6942(03)00043-3. PMID: 12915161.
[5] Sanford M, Wolfe T (2000) Rheumatoid arthritis. In: Melvin JL, Ferrell KM, eds. Rheumatologic Rehabilitation Series: Volume 2 Adult Rheumatic Diseases. Bethesda, MD: American Occupational Therapy Association, 161–204. ISBN-10: 1569001391
[6] Van Den Ende CHM, Vliet Vlieland TPM, Munneke M, Haez JMW. Dynamic exercise therapy for treating rheumatoid arthritis. Cochrane Database Syst Rev Issue 4 1998 Art. No: CD000322.DOI:10.1002/14651858.CD000322. Arthritis and Musculoskeletal Alliance. Standards of care for people with inflammatory arthritis. 2004. http://www.arma.uk.net/pdfs/ia06.pdf

[7] Ekelman BA, Hooker L, Davis A, Klan J, Newburn D, Detwiler K, and Ricchino N. Occupational Therapy Interventions for Adults with Rheumatoid Arthritis: An Appraisal of the Evidence. Occupational therapy In Health Care. 2014; 28(4), 347-361. https://doi.org/10.3109/07380577.2014.919687
[8] Helewa A, Goldsmith CH, Lee P, Bombardier C, Hanes B, Smythe HA, Tugwell P. Effects of occupational therapy home service on patients with rheumatoid arthritis. Lancet. 1991 Jun 15; 337(8755):1453-6. doi: 10.1016/0140-6736(91)93138-y. PMID: 1675329.
[9] Combe B, Landewe R, Lukas C, Bolosiu HD, Breedveld F, Dougados M, Emery P, Ferraccioli G, Hazes JM, Klareskog L, Machold K, Martin-Mola E, Nielsen H, Silman A, Smolen J, Yazici H. EULAR recommendations for the management of early arthritis: report of a task force of the European Standing Committee for International Clinical Studies Including Therapeutics (ESCISIT). Ann Rheum Dis. 2007 Jan; 66(1):34-45. doi: 10.1136/ard.2005.044354. Epub 2006 Jan 5. PMID: 16396980; PMCID: PMC1798412.
[10] de Jong Z, Vliet Vlieland TP. Safety of exercise in patients with rheumatoid arthritis. Curr Opin Rheumatol. 2005 Mar; 17(2):177-82. doi: 10.1097/01.bor.0000151400.33899.88. PMID: 15711232.
[11] Hammond, A.; Freeman, K. The Long-Term Outcomes from a Randomized Controlled Trial of an Educational-Behavioural Joint Protection Programme for People with Rheumatoid Arthritis. *Clin. Rehabil.*2004, *18*, 520–528. [Google Scholar] [CrossRef] [PubMed]
[12] Porter BJ, Brittain A. Splinting and hand exercise for three common hand deformities in rheumatoid arthritis: a clinical perspective. Curr Opin Rheumatol. 2012 Mar; 24(2):215-21. doi: 10.1097/BOR.0b013e3283503361. PMID: 22269659.
[13] Jack J, Estes RI. Documenting progress: hand therapy treatment shift from biomechanical to occupational adaptation. Am J Occup Ther. 2010 Jan-Feb; 64(1):82-7. doi: 10.5014/ajot.64.1.82. PMID: 20131567.
[14] Tonga E, Düger T, Karataş M. Effectiveness of Client-Centered Occupational Therapy in Patients With Rheumatoid Arthritis: Exploratory Randomized Controlled Trial. Arch Rheumatol. 2015 Oct 21; 31(1):6-13. doi: 10.5606/ArchRheumatol.2016.5478. PMID: 29900964; PMCID: PMC5827861.
[15] Sharpe L, Sensky T, Timberlake N, Ryan B, Allard S. Long-term efficacy of a cognitive behavioural treatment from a randomized controlled trial for patients recently diagnosed with rheumatoid arthritis. Rheumatology (Oxford). 2003 Mar; 42(3):435-41. doi: 10.1093/rheumatology/keg144. PMID: 12626793.
[16] Vučić, R.,Marković, P.,Savković**,** N: Klinička radna terapija: praktikum sa terapeutskim medicinskim podsetnikom.2.izdanje.Beograd, NIBAlternativa; 2001.ID = 89934092 CIP - Katalogizacija u publikaciji Narodna biblioteka Srbije, 615.851.3(035)
[17] Lorig KR, Holman H. Self-management education: history, definition, outcomes, and mechanisms. Ann Behav Med. 2003 Aug; 26(1):1-7. doi: 10.1207/S15324796ABM2601_01. PMID: 12867348.
[18] Organizacija službe Klinike za rehabilitaciju "Dr.Miroslav Zotović". Available from**:** https://www.rehabilitacija.rs/unutrasnja-organizacija/stacionarna-odeljenja/odeljenje-c-reumatolosko-odeljenje/
[19] Organizacija službe Klinike za rehabilitaciju "Dr.Miroslav Zotović". Available from**:** https://www.rehabilitacija.rs/unutrasnja-organizacija/terapijska-odeljenja/radna-terapija/
[20] Stošljević, M.:Osnovi specijalne edukacije i rehabilitacije osoba sa motoričkim poremećajima. Društvo defektologa Srbije; Beograd, 2013. ISBN 978-86-84765-44-6
[21] van den Hout WB, de Jong Z, Munneke M, Hazes JM, Breedveld FC, Vliet Vlieland TP. Cost-utility and cost-effectiveness analyses of a long-term, high-intensity exercise

program compared with conventional physical therapy in patients with rheumatoid arthritis. Arthritis Rheum. 2005 Feb 15; 53(1):39-47. doi: 10.1002/art.20903. PMID: 15696568.

[22] Hammond A, Bryan J, Hardy A. Effects of a modular behavioural arthritis education programme: a pragmatic parallel-group randomized controlled trial. Rheumatology (Oxford). 2008 Nov; 47(11):1712-8. doi: 10.1093/rheumatology/ken380. Epub 2008 Sep 24. PMID: 18815153.

[23] Masiero, S.; Boniolo, A.;Wassermann, L.; Machiedo, H.; Volante, D.; Punzi, L. Effects of an Educational-Behavioral Joint Protection Program on People with Moderate to Severe Rheumatoid Arthritis: A Randomized Controlled Trial. Clin. Rheumatol. 2007, 26, 2043–2050. [CrossRef]

[24] Metsios, G.S.; Kitas, G.D. Physical Activity, Exercise and Rheumatoid Arthritis: Effectiveness, Mechanisms and Implementation. *Best Pract. Res. Clin. Rheumatol.*2018,*32*, 669–682. [Google Scholar] [CrossRef]

[25] Häkkinen A, Sokka T, Hannonen P. A home-based two-year strength training period in early rheumatoid arthritis led to good long-term compliance: a five-year followup. Arthritis Rheum. 2004 Feb 15; 51(1):56-62. doi: 10.1002/art.20088. PMID: 14872456.

[26] Crowley, L. (2009) The effectiveness of home exercise programmes for patients with rheumatoid arthritis: a review of the literature.Physical Therapy Reviews; 14(3):149-159. doi:10.1179/174328809X435277

[27] Christie, A.; Jamtvedt, G.; Dahm, K.T.; Moe, R.H.; Haavardsholm, E.A.; Hagen, K.B. Effectiveness of Nonpharmacological and Nonsurgical Interventions for Patients with Rheumatoid Arthritis: An Overview of Systematic Reviews.*Phys. Ther.*2007,*87*, 1697–1715. [Google Scholar] [CrossRef] [Green Version]

[28] Cramp F. The role of non-pharmacological interventions in the management of rheumatoid-arthritis-related fatigue. *Rheumatology.*2019;58:22–28. doi:10.1093/rheumatology /kez310.[PMC free article] [PubMed] [CrossRef] [Google Scholar]

POREĐENJE EFIKASNOSTI STANDARDNE I KOMBINOVANE RADNE TERAPIJE U POVEĆANJU POKRETLJIVOSTI RAMENA I LAKTA PACIJENATA SA REUMATOIDNIM ARTRITISOM

Nada Savković[1]***, Gordana Grbic***[1]***, Gordana Savković***[1]

[1]Akademija strukovih studija Beograd, Odsek Visoka zdravstvena škola, Cara Dušana 254, 11080 Zemun, Beograd, Republika Srbija

Sažetak. *Reumatoidni artritis je identifikovan kao najčešća hronična zapaljenska zglobna bolest. Dovodi do smanjenja profesionalnih sposobnosti i nezavisnosti u svakodnevnim aktivnostima uz prateće lične i socijalne probleme. Osnovni zadaci rehabilitacionih intervencija su kontrolisano mirovanje korišćenjem rasteretnih položaja, održavanje fiziološke dužine mišića radi prevencije deformiteta i edukacija pacijenata u vezi očuvanja energetskih kapaciteta za održavanje funkcionalne nezavisnosti. Cilj istraživanja je da se ispita efikasnost radne terapije sa dodatkom vežbi iz programa specijalne edukacije u poređenju sa standardnim radno terapijskim tretmanom za povećanje pokretljivosti gornjih ekstremiteta pacijenata sa reumatoidnim artritisom.* ***Na*** *uzorku od 64 pacijenta, koji su u procesu rehabilitacije u Klinici za rehabilitaciju "Dr.Miroslav Zotović» u Beogradu primenjeni su somatopedski testovi za procenu motiliteta gornjih ekstremiteta - O` Connor test i Ring proba. Posle evaluacije, individualno doziran program vežbi pridodat je radnoj terapiji i sprovođen u toku 12 nedelja zajedno sa radnom terapijom za eksperimentalnu grupu od 32 pacijenta, dok je kontrolna grupa bila samo u procesu radne terapije bez vežbi iz programa specijalne edukacije.Istim testovima je na kraju istraživanja urađena reevaluacija pokretljivosti u ispitivanim zglobovima pacijenata iz obe grupe. Pacijenti iz eksperimentalne grupe su ispoljili bolje rezultate u ispitivanim varijablama koje su se odnosile na okulomotornu koordinaciju pokreta na nivou lakta i ramena. Analizom dobijenih rezultata, može se zaključiti da su standardne metode radne terapije kombinovane sa elementima vežbi iz programa specijalne edukacije dovele do povećanja pokretljivosti u lakatnom i ramenom zglobu.*

Ključne reči: *radna terapija, reumatoidni artritis, specijalna edukacija*